REMARKS

Reconsideration of the above identified application in view of this Amendment is respectfully requested. This Amendment is in response to the Office Action dated January 29, 2007. In said Office Action, Disposition of Claims is stated as follows:

> Claims 3 - 111 are pending in the application.

> Claims 3 - 111 are rejected.

By said Office Action, the Examiner stated the following detailed action items:

Item 1: the abstract was objected to because the abstract must be limited to a single paragraph on a separate sheet. The Examiner requested correction.

Item 2: claims 3 - 111 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

Item 3: claims 23 - 27, and 29 - 37, were rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Items 4 - 11: various specific groups of claims within claims 3 - 111 were rejected under 35 U.S.C. 103(a) as being unpatentable over Cabib et al. (U.S. Patent No. 5,539,517), in view of one or more of Examiner cited prior art documents: Tesuda (U.S. Patent No. 6,697,160), Erickson (U.S. Patent No. 5,440,388), Schwiesow (U.S. Patent No. 4,444,501), Saego et al. (U.S. Patent No. 5,801,830), Inoue et al. (U.S. Patent No. 5,253,183), Cabib et al. (U.S. Patent No. 6,088,099), Bleier et al. (U.S. Patent No. 5,949,543), and Carangelo et al. (U.S. Patent No. 5,486,917).

By this Amendment, the Abstract was amended and provided on a separate sheet. Claims 3, 23 - 27, 29 - 37, 38, 56, 70, 71, and 86, were amended. Claims 4 - 22, 28, 39 - 55, 57 - 69, 72 - 85, and 87 - 111, remain as previously presented.

The Examiner is respectfully made aware that the US Patent Application Publication, to Moshe, having Pub. No.: US 2005/0275847 A1, and Pub. Date: Dec. 15, 2005, of the present U.S. Pat. Appl. No. 10/508,960, was used for preparing the present Amendment. Accordingly, Applicant's references to page and paragraph numbers correspond to those of the just stated publication of the present patent application document.

Briefly, the present invention relates to real time high speed high resolution hyper-spectral imaging. Method and system include: (a) emitting electromagnetic radiation by objects in a scene or a sample; (b) receiving and dividing collimated object emission beams by an optical interferometer, for generating interference images; wherein the optical interferometer includes: a beam splitter; a fixed mirror; a movable mirror; a piezoelectric motor, for displacing the movable mirror along an axis; a distance change feedback sensor, for sensing and measuring change in distance or position of the movable mirror along the axis; a piezoelectric motor controller, for actuating and controlling the piezoelectric motor; and an optical interferometer mount, as a thermo-mechanically stable mount of selected components of the optical interferometer; (c) determining and piezoelectrically changing magnitudes of optical path differences of divided collimated object emission beams, by the optical interferometer, for generating interference images for each magnitude of the optical path difference; (d) focusing and recording generated interference images associated with corresponding magnitudes of optical path difference, using camera optics and a detector, for forming recorded interference images; (e) improving quality of the recorded interference images, for forming improved quality interference images; and (f) transforming the improved quality interference images to frequency domain, for forming corresponding interferogram images.

Abstract

The Examiner objected to the abstract because the abstract must be limited to a single paragraph on a separate sheet. The Examiner requested correction.

By this Amendment, the Applicant provided the (single paragraph) abstract on a separate page (i.e., page 3, hereinabove). Additionally, by this Amendment, the abstract was amended in the same manner as the claims in the immediately following section, regarding the Examiner's stated objectionable phrase "piezoelectrically determining and changing magnitude of optical path difference . . . ".

Thus, above provision of the abstract completely overcomes the Examiner's objection thereto, in full compliance with MPEP - 608.01(b).

Claims Rejections - 35 U.S.C. 112, first paragraph

The Examiner objected to claims 3 - 111 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

Specifically, the Examiner stated that "With regard to (independent) claims 1 *[should be 3]*, 38, 56, and 86; the phrase "piezoelectrically determining and changing magnitude of said optical path difference" does not meet the enablement requirement. The Examiner stated that the specification provides enablement for "piezoelectrically changing magnitude of said optical path difference", but does not provide enablement for "piezoelectrically determining the magnitude of said optical path difference".

By this Amendment, the Applicant has amended those parts of the recitations of (independent) claims 3, 38, 56, and 86, which include forms of the objectionable phrase, such that the amended recitation of that phrase is "determining and piezoelectrically changing magnitude of said optical path difference".

Additionally, by this Amendment, for preserving proper antecedent basis of the amended phrase in (amended) independent claim 56, therefore, the Applicant similarly amended the objectionable phrase in recitations of claims 70 and 71, depending from claim 56. No other dependent claim includes any form of the objectionable phrase "piezoelectrically determining the magnitude of said optical path difference".

Along with dependent claims 70 and 71, each of the remaining dependent claims, that is, claims 4 - 37, 39 - 55, 57 - 69, 72 - 85, and 87 - 111, depends from a (currently amended) base (independent) claim 3, 38, 56, or 86.

Thus, the above amendments of independent claims 3, 38, 56, and 86, and amendments of dependent claims 70 and 71, completely overcome the Examiner's rejections to claims 3 - 111, based on grounds of 35 U.S.C. 112, first paragraph, regarding enablement.

<u>Claims Rejections - 35 U.S.C. 101</u>

The Examiner rejected claims 23 - 27, and 29 - 37, under 35 U.S.C. 101, because the claimed invention is directed to non-statutory subject matter. Specifically, the Examiner stated that "The claims are directed to a judicial exception; as such, pursuant to the Interim Guidelines on Patent Eligible Subject Matter (MPEP 2106), the claims must have either physical transformation and/or useful, concrete and tangible result. The claims fail to include transformation from one physical state to another. Although, the claims appear useful and concrete, there does not appear to be a tangible result claimed". The Examiner further stated that "While these steps *[recited in these claims]* appear useful and concrete the analyzed, calculated, determined, selected, etc result is abstract because nothing is done with the result (saved, displayed, or used)".

By this Amendment, claims 23 - 27, and 29 - 37, were amended. More specifically, in each claim, recitation of each step, or sub-step thereof, was amended by stating that implementation of each step, or sub-step thereof, is performed "via a central programming and control/data/information signal processing unit", "wherein results thereof are stored in a database".

Support for amendments of claims 23 - 27, and 29 - 37, is clearly and literally found in the specification. Specifically, therein, from page 15, paragraph [0127], through page 18, paragraph [0162], along with reference to FIGS. 1A, 1B, 1C, and 1D, which encompasses the illustrative descriptions of Step (e) and sub-steps thereof (claims 23 - 27), and the illustrative descriptions of Steps (f), (g), (h), and (i), and sub-steps thereof (claims 29 - 37).

By the preceding described amendments of claims 23 - 27, and 29 - 37, the Applicant fully believes, and firmly contends, that the subject matter recited in each of these claims is definitely 'sufficient to constitute a useful, concrete, and tangible result', in full accordance with 35 U.S.C. 101, in view of the Interim Guidelines on Patent Eligible Subject Matter (MPEP 2106).

Accordingly, the Applicant believes that current amendments of claims 23 - 27, and 29 - 37, completely overcomes the Examiner's rejection based on grounds of 35 U.S.C. 101, regarding claiming a non-tangible result, in view of the Interim Guidelines on Patent Eligible Subject Matter (MPEP 2106).

Thus, the Applicant believes that (currently amended) claims 23 - 27, and 29 - 37, are in allowable condition, and such action is respectfully requested.

Claims Rejections - 35 U.S.C. 103(a)

The Examiner rejected various specific groups of claims within claims 3 - 111 under 35 U.S.C. 103(a), as being unpatentable over Cabib et al. (U.S. Patent No. 5,539,517), in view of one or more of Examiner cited prior art documents: Tesuda (U.S. Patent No. 6,697,160), Erickson (U.S. Patent No. 5,440,388), Schwiesow (U.S. Patent No. 4,444,501), Saego et al. (U.S. Patent No. 5,801,830), Inoue et al. (U.S. Patent No. 5,253,183), Cabib et al. (U.S. Patent No. 6,088,099), Bleier et al. (U.S. Patent No. 5,949,543), and Carangelo et al. (U.S. Patent No. 5,486,917).

Regarding Independent Claims 3, 38, 56, and 86

The Examiner rejected (independent) claims 3, 38, 56, 86, and selected dependent claims therefrom, under 35 U.S.C. 103(a), as being unpatentable over Cabib et al. (U.S. Patent No. 5,539,517; Cabib et al. hereinafter), in view of Tesuda (U.S. Patent No. 6,697,160; Tesuda hereinafter). In this rejection, with regard to each of the (independent) claims 3, 38, 56, and 86, the Examiner stated that "Cabib et al. fail to teach a distance change feedback sensor or a piezoelectric motor controller, therefore there is no feedback control for the piezoelectric motor including the steps of displacing said movable mirror, sensing and measuring change in distance of said movable mirror, and actuating and controlling said piezoelectric motor by said piezoelectric motor controller".

Then, the Examiner briefly summarized the teachings of Tsuda which are 'apparently' relevant to selected portions of the recitations of (independent) claims 3, 38, 56, and 86. Thereafter, with regard to the (independent) claims 3, 38, 56, and 86, the Examiner stated that ". . . it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Cabib et al. by adding the path length displacement sensor and piezoelectric motor controller, of Tsuda, to control the piezoelectric motor 149a" (Fig. 13 in Cabib et al.). Finally, the Examiner stated that "The motivation for this modification is found in Tsuda which corrects any optical path length variations of the piezoelectric motor".

With all due respect to the Examiner, at first glance, it may appear that the preceding Examiner's (prima facie) 35 U.S.C. 103(a) obviousness rejection has merit, however, upon close review and analysis of the cited primary and secondary references (i.e., Cabib et al. and Tsuda, respectively), in view of the 'entirety' of the recitation of each of the (independent) claims 3, 38, 56, and 86, of the present application, one arrives at the firm conclusion that the recitations of the (independent) claims 3, 38, 56, and 86, of the present application, are clearly non-obvious over Cabib et al. in view of Tsuda. Accordingly, the Applicant firmly traverses the above Examiner's 35 U.S.C. 103(a) obviousness rejection of (independent) claims 3, 38, 56, and 86.

Explanation, and understanding thereof, of the Applicant's preceding traversal necessarily requires presentation of selected portions of each of the Cabib et al. (primary) reference, and of the Tsuda (secondary) reference, which are most relevant to recitations of the (independent) claims 3, 38, 56, and 86, of the present application, in view of the Examiner's above rejection.

The Cabib et al. invention is entitled: "Method For Simultaneously Measuring The spectral Intensity As A Function Of Wavelength Of All The Pixels Of A Two dimensional Scene", and "relates to a method and apparatus for spectral analysis of images, and particularly for analyzing an optical image of a scene to determine the spectral intensity of each pixel thereof" (Cabib et al., col. 1, lines 13 - 16). In Cabib et al., in the Summary Of The Invention section (col. 3, lines 13 - 18), it is stated "In all the embodiments of the invention described below, all the required optical phase differences are scanned simultaneously with the spatial scanning of the field of view in order to obtain all the information required to reconstruct the spectrum, so that the spectral information is collected simultaneously with the imaging information".

In Cabib et al., in the Description Of The Preferred Embodiments section (col. 4, lines 58 - 67, and col. 5, lines 11 - 24, along with reference to Fig. 2), there is illustratively described the main components and operation of a 'generalized' embodiment of the inventive imaging spectrometer. Therein, it is stated "A critical element in the novel system is the optical path difference generator or interferometer 24, which outputs modulated light corresponding to a predetermined set of linear combinations of the spectral intensity of the light emitted from each pixel of the scene to be analyzed. The output of the interferometer is focused onto the detector array 26. Thus, all the required optical phase differences are scanned simultaneously with the spatial scanning of the field of view, in order to obtain all the information required to reconstruct the spectrum. The spectrum of all the pixels in the scene is thus collected simultaneously with the imaging information, thereby permitting analysis of the image in a real-time manner".

Further therein (col. 5, line 42, to col. 9, line 3, along with reference to Fig. 3), there is illustratively described in detail the components and operation of an exemplary specific embodiment of the inventive imaging spectrometer, "based on the use of a moving type interferometer in which the OPD is varied (e.g., via a piezoelectric scanner) to modulate the light (originating from the source), namely, a Fabry-Perot interferometer 33 with scanned thickness (i.e., an etalon)". Therein (col. 6, line 41, to col. 7, line 15) is described ". . . one of many ways of scanning the field of view and the thickness of the etalon 33".

Specifically, therein (col. 6, lines 43 - 63) it is stated "Suppose the array 36 is composed of a linear set of N detectors, whose signals can be monitored simultaneously and independently. Suppose M performs a raster type scan of m lines (larger than N) and

that the plane of the paper in FIG. 3 is the vertical direction. Every time M has scanned one horizontal line, the thickness "d" of the etalon 33 is incremented by the piezoelectric scanner 37 one step in synchronization with the vertical scanner 32 starting from d=0, until N lines are scanned, and N thickness steps are made. At this moment the etalon thickness is returned to the original value, and the thickness scanned again. The process is repeated until the scanner has scanned one complete frame. Except for a marginal region of N pixels at the top and at the bottom of the field of view, all the pixels of the field of view are measured with N optical phase differences by different detectors. All the detector signals are sampled and recorded at a high rate, such that all the needed information is collected and fed to the signal processor 37 to reconstruct both the image and the spectra of all the pixels".

Additionally, specifically, therein (col. 6, line 66, to col. 7, line 14) is illustratively described ". . . another possible configuration which includes a two-dimensional array of detectors: in this case the same idea applies . . . ", where it is stated "For example, if the array is an Nxm matrix in a "push broom" approach . . . , the N lines and m columns correspond to the same matrix in object space. In this configuration, the Fabry-Perot thickness or optical phase difference is kept fixed for the time of integration of one line. Then the scanner performs a step vertically, and the Fabry-Perot thickness d is stepped in synchronization by one step, starting from zero, until N steps are performed. At this point the scanner continues scanning vertically, the thickness starts from zero again, and the steps are repeated until the complete field of view is scanned. In this way all the pixels are measured through all the optical phase differences, and the recorded information is processed to yield the spectra of every pixel".

Additionally, specifically, therein (col. 8, lines 53 - 66) it is stated "It will be seen when using the moving type interferometer as illustrated in FIG. 3 . . . ", "All the spectral information in all the pixels may be collected by scanning the optical path difference in synchronization with the scene scan, at the end of which, every pixel has been measured through all the optical path differences by different detectors. By careful bookkeeping and by applying the appropriate matrix inversion (such as Fourier transformation), the spectrum of every pixel may be calculated. The bookkeeping is needed because different detectors gather the information of different OPD's of one pixel at different times".

Further therein (col. 11, lines 6 - 31, along with reference to Fig. 5), there is illustratively described in detail the components and operation of an exemplary specific embodiment of the inventive "imaging spectrometer including a Michelson interferometer

of the moving type, similar to that of FIG. 3, namely, wherein the OPD varies with moving an element (e.g., a mirror) of the interferometer". Therein, it is stated "By scanning mirror 56 in the way of the traditional Michelson interferometer, while mirror 55 is stationary, the OPD of the two arms is varied simultaneously for all pixels in the scene".

Further therein (col. 13, lines 29 - 49, along with reference to Fig. 9), there is illustratively described in detail the components and operation of an exemplary specific embodiment of the inventive "imaging spectrometer including a Michelson interferometer of the moving type, similar to that illustrated in FIG. 5, but constructed so that the light is focused on the reflectors through microscope objectives". Therein, it is stated "Reflector 75 and the microscope system move together along the optical axis to provide scanning of the OPD in synchronization with the scanner 73 (if present), as described above with respect to FIG. 5".

Further therein (col. 15, lines 34 - 44, along with reference to Fig. 13), there is illustratively described in detail the components and operation of an exemplary specific embodiment of the inventive "imaging spectrometer including an interferometer of the Michelson (moving) type, similar to FIG. 5. Therein, it is stated "Thus, in FIG. 13, the scanning is effected by mirror 146 controlled by scanner 149a, to change the distance between the mirror and the beamsplitter 143, and thereby to vary the OPD".

The Tsuda invention is entitled: "Light Wavelength Measuring Apparatus And Method For Measuring Wavelength Of Subject Light With High Speed By Using Two-beam Interferometer", and "relates to a light wavelength measuring apparatus that uses a two-beam interferometer and a measuring method therefor. Particularly, the present invention relates to a light wavelength measuring apparatus that measures a wavelength of an incident light to be measured by using a two-beam interferometer, wherein the wavelength of the subject light is measured with high speed and a method therefor" (Tsuda, col. 1, lines 17 - 24).

In Tsuda, in the Brief Summary Of The Invention section (col. 3, line 59, to col. 4, line 47), and in the Detailed Description Of The Invention section (col. 16, line 1, to col. 20, line 39, along with reference to Figs. 10, 11, 12, and 15), there is illustratively described in detail the components and operation of various embodiments (particularly, the fifth aspect through the ninth aspect) of the Tsuda invention. Therein (col. 16, lines 6 - 11), it is stated ". . . in order to solve the problem of wavelength measuring error due to the change in refractive index in the optical path of the two-beam interferometer and change in

the optical path difference. These embodiments are characterized in that a reference light having a stabilized wavelength is inputted to the two-beam interferometer 1, together with the subject light".

In Tsuda (col. 16, lines 12 - 67, along with reference to Fig. 10), there is illustratively described in detail the light wavelength measuring apparatus according to the fifth aspect. Therein (col. 16, lines 15 - 26) it is stated "FIG. 10 shows an embodiment according to the fifth aspect of the present invention. In this embodiment a phase element 21 is interposed in one of the optical paths of a Michelson interferometer. The two-beam interferometer 1 is fed with a reference light having a stabilized reference wavelength light, via generally the same optical path as for the subject light. A combined light is made for each of these beams and each combined light is fed to the polarization state detector 2. The polarization state detector 2 converts the combined lights into respective electric signals, and then outputs the signals as phase difference signals".

Thereafter (col. 17, line 1, to col. 18, line 15, along with reference to Fig. 11) there is illustratively described in detail the components and operation of ". . . the light wavelength measuring apparatus according to the sixth aspect of the present invention", which ". . . is the light wavelength measuring apparatus according to the fifth aspect comprising further an actuator (i.e., a piezoelectric element) which is capable of slightly varying the length of at least one of the optical paths of the two-beam interferometer". *[Note is made that this sixth aspect of the Tsuda invention was specifically cited in the Office Action by the Examiner in the above Examiner's 35 U.S.C. 103(a) obviousness rejection of (independent) claims 3, 38, 56, and 86.]*

Therein (col. 17, lines 10 - 36) it is stated "In this embodiment, an actuator 151 is provided by a piezoelectric element which varies thickness in accordance to variation in applied voltage. The variation in the reference light phase difference signal $\Delta\theta r$ obtained from the polarization state detector 2 corresponds to the variation in the refraction ratio and in the optical path difference in the two-beam interferometer. Thus, the electric circuit 3 outputs this variation in the signal $\Delta\theta r$ as an optical path length variation correction signal, to a piezoelectric element driver 9. The piezoelectric element driver 9 coverts the given correction signal into a piezoelectric element drive signal, and outputs the converted signal to the piezoelectric element 151 serving as the actuator. The piezoelectric element 151 serving as the actuator varies the thickness of the element in accordance with the drive signal, thereby varying the difference in optical path length. As the difference in optical path length varies, the $\Delta\theta r$ varies. The optical path length correction signal is fed back to

cancel the detected variation of the $\Delta\theta r$. This feedback loop provides a control so that .$\Delta\theta r$ does not vary. Thus, the product of the optical path difference and the reflectance is maintained at a constant value".

It should be perfectly clear to one of ordinary skill in the art that in order to properly implement the light wavelength measuring apparatus according to the sixth aspect of the Tsuda invention (Fig. 11), the embodiment thereof including "an actuator (i.e., piezoelectric element 151) which is capable of slightly varying the length of at least one of the optical paths of the two-beam interferometer", the embodiment, in addition to including "a reference light having a stabilized wavelength inputted to the two-beam interferometer 1, together with the subject light", necessarily must also include "a phase element 21 interposed in one of the optical paths of the Michelson interferometer 1".

The light wavelength measuring apparatus according to each of the seventh aspect (col. 18, line 16, to col. 19, line 30; Figs. 11 and 12), the eighth aspect (col. 19, lines 31 - 52; Fig. 11), and the ninth aspect (col. 19, line 53, to col. 20, line 39; Fig. 15), of the Tsuda invention is a variation of the light wavelength measuring apparatus according to the sixth aspect of the Tsuda invention. More specifically, each of the seventh, eighth, and ninth, aspects of the Tsuda invention, has an embodiment wherein "a phase element 21 is interposed in one of the optical paths of a Michelson interferometer 1", as clearly seen in Figs. 11 and 15.

Accordingly, it should also be perfectly clear to one of ordinary skill in the art that in order to properly implement the light wavelength measuring apparatus according to each of the seventh, eighth, and ninth, aspects of the Tsuda invention (Figs. 11, 15), each embodiment thereof including "an actuator (piezoelectric element 151) which is capable of slightly varying the length of at least one of the optical paths of the two-beam interferometer 1", each embodiment, in addition to including "a reference light having a stabilized wavelength inputted to the two-beam interferometer 1, together with the subject light", necessarily must also include "a phase element 21 interposed in one of the optical paths of the Michelson interferometer 1".

It is clearly understood from the preceding that each of the sixth, seventh, eighth, and ninth, aspects of the Tsuda invention is of an embodiment which includes an optical path length difference (variation) correcting 'feedback control loop', including a piezoelectric motor (actuator - piezoelectric element 151), a distance change feedback sensor (path length displacement sensor - the reference light), and a piezoelectric motor controller (electric circuit 3, and piezoelectric element driver 9), **but also requires**

presence and operation of "a phase element 21 interposed in one of the optical paths of the Michelson interferometer 1", for properly performing the described optical path length difference (variation) correcting feedback control of the interferometer.

By properly understanding the above summarized relevant sections of Cabib et al., regarding the components and operation of the various embodiments of the inventive imaging spectrometer including a Michelson interferometer of the moving type, wherein the OPD is varied by moving an element (a mirror) of the interferometer, simultaneously for all pixels in the imaged scene, in view of the above summarized relevant sections of Tsuda, regarding the components and operation of the various embodiments of the optical path length difference (variation) correcting feedback control loop, the Applicant firmly contends that it would **not** have been obvious to one of ordinary skill in the art at the time the invention was made to modify Cabib et al. by adding the path length displacement sensor (the reference light) (distance change feedback sensor) and piezoelectric motor controller (electric circuit and piezoelectric element driver), of Tsuda, to control the piezoelectric motor 149a (Fig. 13 in Cabib et al.), for arriving at the present invention claimed by recitations of (independent) claims 3, 38, 56, or 86, of the present application.

First, the Applicant firmly contends that the type of optical path length variation corrections which are made by operating any of the various embodiments of the optical path length difference (variation) correcting feedback control loop, taught by Tsuda, would **not** have provided motivation for one of ordinary skill in the art at the time the invention was made to modify Cabib et al. by adding the path length displacement sensor (the reference light) (distance change feedback sensor) and piezoelectric motor controller (electric circuit and piezoelectric element driver), as well as a phase element interposed in one of the optical paths, of Tsuda, to control the piezoelectric motor 149a (Fig. 13 in Cabib et al.), for arriving at the present invention claimed by recitations of (independent) claims 3, 38, 56, or 86, of the present application.

Second, such proposed modification of the components, configuration, and operation, of any of the above indicated various embodiments of the Cabib et al. imaging spectrometer including a Michelson interferometer of the moving type, wherein the OPD is varied by moving an element (a mirror) of the interferometer, simultaneously for all pixels in the imaged scene, as illustratively described, with reference to Figs. 2, 5, 9, or 13, in Cabib et al., would necessarily require a non-obvious (significant) redesign or reconfiguration of the Cabib et al. imaging spectrometer, as well as a change in the basic

principle of operation under which the Cabib et al. imaging spectrometer was designed and intended to operate.

Specifically, addition of the path length displacement sensor (the reference light) (distance change feedback sensor) and piezoelectric motor controller (electric circuit and piezoelectric element driver), as well as a phase element interposed in one of the optical paths, of Tsuda, would necessarily require a non-obvious (significant) redesign or reconfiguration, as well as a non-obvious (significant) change in the basic principle of operation, of the optical and electrical components and configuration of any of the above indicated various embodiments of the Cabib et al. imaging spectrometer, in order to control the piezoelectric motor thereof, for arriving at the present invention claimed by recitations of (independent) claims 3, 38, 56, or 86, of the present application.

Third, such proposed modification of the components, configuration, and operation, of any of the above indicated various embodiments of the Cabib et al. imaging spectrometer, via addition of any of the various embodiments of the optical path length difference (variation) correcting feedback control loop, taught by Tsuda, would likely render the Cabib et al. imaging spectrometer unsatisfactory for its intended purpose of (high speed, high resolution) spectral analysis of images, particularly for analyzing an optical image of a scene to determine the spectral intensity of each pixel thereof, which clearly would not lead to the present invention claimed by recitations of (independent) claims 3, 38, 56, or 86, of the present application.

Fourth, the Applicant firmly contends that such proposed modification of the components and operation of any of the various embodiments of the Cabib et al. imaging spectrometer, via addition of any of the various embodiments of the optical path length difference (variation) correcting feedback control loop, taught by Tsuda, would not reasonably be expected to succeed in arriving at the present invention claimed by recitations of (independent) claims 3, 38, 56, or 86, of the present application. In other words, the Applicant firmly contends that such proposed modification of the components and operation of any of the various embodiments of the Cabib et al. imaging spectrometer, via the teachings of Tsuda, does not have a reasonable expectation of success for arriving at the present invention claimed by recitations of (independent) claims 3, 38, 56, or 86, of the present application.

Based on the above discussion, the Applicant firmly contends that the recitations of the (independent) claims 3, 38, 56, and 86, of the present application, are clearly

non-obvious over Cabib et al. in view of Tsuda. Accordingly, the preceding discussion completely overcomes the above Examiner's 35 U.S.C. 103(a) obviousness rejection of (independent) claims 3, 38, 56, and 86.

Thus, in view of the above amendments of (independent) claims 3, 38, 56, and 86, for overcoming the Examiner's rejections to claims 3 - 111, based on grounds of 35 U.S.C. 112, first paragraph, regarding enablement, and in view of the preceding discussion for overcoming the above Examiner's 35 U.S.C. 103(a) obviousness rejection of (independent) claims 3, 38, 56, and 86, the Applicant believes that the recitations of (currently amended) (independent) claims 3, 38, 56, and 86, of the present application, are therefore in allowable condition, and such action is respectfully requested.

In view of the hereinabove Applicant's current amendments of claims 23 - 27, and 29 - 37, for overcoming the Examiner's rejection based on grounds of 35 U.S.C. 101, the Applicant submits that since (currently amended) (independent) claim 3 is in allowable condition, therefore, (currently amended) claims 23 - 27, and 29 - 37, depending therefrom, are in allowable condition, and such action is respectfully requested.

In view of the preceding, the Applicant submits that since (currently amended) base (independent) claims 3, 38, 56, and 86, are in allowable condition, therefore, (currently amended) claims 70 and 71, and (previously presented) claims 4 - 22, 28, 39 - 55, 57 - 69, 72 - 85, and 87 - 111, depending from (currently amended) base (independent) claims 3, 38, 56, and 86, are in allowable condition, and such action is respectfully requested.

Thus, in view of the above, the Applicant submits that (currently amended) base (independent) claims 3, 38, 56, and 86; (currently amended) claims 23 - 27, and 29 - 37; (currently amended) claims 70 and 71; and (previously presented) claims 4 - 22, 28, 39 - 55, 57 - 69, 72 - 85, and 87 - 111, are all in allowable condition, and such action is respectfully requested.

By this Amendment, the Applicant respectfully submits that (currently amended) claims 3, 23 - 27, 29 - 38, 56, 70, 71, and 86; and (previously presented) claims 4 - 22, 28, 39 - 55, 57 - 69, 72 - 85, and 87 - 111, are all in condition for allowance. The Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

Martin D. Moynihan

Martin D. Moynihan
Registration No. 40,338

Date: July 30, 2007

Enclosed:
Petition For Extension (three (3) months).